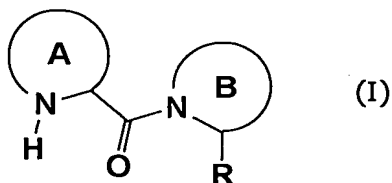


Claims

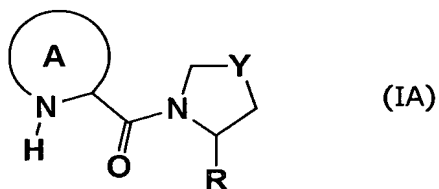
1. A compound represented by formula (I):



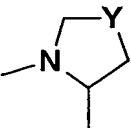
wherein ring A represents a nitrogen-containing heterocyclic ring which may have a substituent(s);

ring B represents 5-membered heterocyclic ring which may have a substituent(s) and R represents a hydrogen atom or cyano, or a salt thereof.

2. The compound according to claim 1, which is represented by formula (IA):

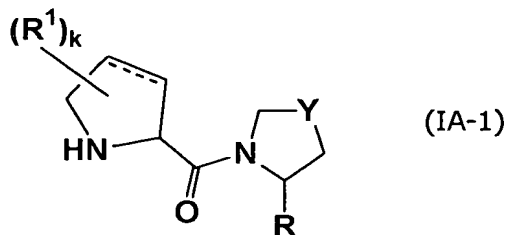


wherein Y represents -CH₂-, an oxygen atom, a nitrogen atom, or a sulfur atom which may be oxidized;

the ring represented by  may be substituted and the other symbols have the

same meanings as defined in claim 1, or a salt thereof.

3. The compound according to claim 1, which is represented by formula (IA-1):



wherein k's of R¹ each independently, represents:

- (1) a C1-8 carbon chain which may be substituted by 1-5 of R²,
- (2) a carbocyclic ring which may be substituted by 1-5 of R³,
- (3) a heterocyclic ring which may be substituted by 1-5 of R³, wherein a carbon atom of the heterocyclic ring binds to ring A, or
- (4) two R¹'s, taken together with abutting carbon atoms or the same carbon atom of ring A, form a carbocyclic ring or a heterocyclic ring, wherein the ring may be substituted by 1-5 of R³;

R² represents halogen, nitro, cyano, oxo, OR¹⁰, NR¹¹R¹², SR¹⁰, SO₂R¹³, COOR¹⁰, CONR¹¹R¹², COR¹³, =N-OR¹⁰, SO₂NR¹¹R¹², OCOR¹³, OSO₂R¹³, NR¹⁴CONR¹¹R¹², NR¹⁴COOR¹⁰, OCOOR¹⁰, OCONR¹¹R¹², SO₂OR¹⁰, OSO₂OR¹⁰, SOR¹³, a carbocyclic ring which may be substituted by 1-5 of R³, or a heterocyclic ring which may be substituted by 1-5 of R³;

R³ represents a C1-8 carbon chain which may be substituted with 1 to 5 groups selected from halogen, nitro, cyano, oxo, OR¹⁰, NR¹¹R¹², SR¹⁰, SO₂R¹³, COOR¹⁰, CONR¹¹R¹², COR¹³, =N-OR¹⁰, SO₂NR¹¹R¹², OCOR¹³, OSO₂R¹³, NR¹⁴CONR¹¹R¹², NR¹⁴COOR¹⁰, OCOOR¹⁰, OCONR¹¹R¹², SO₂OR¹⁰, OSO₂OR¹⁰, SOR¹³, a carbocyclic ring which may have a substituent(s) or a heterocyclic ring which may have a substituent(s); or halogen, nitro, cyano, oxo, OR¹⁰, NR¹¹R¹², SR¹⁰, SO₂R¹³, COOR¹⁰, CONR¹¹R¹², COR¹³, =N-OR¹⁰, SO₂NR¹¹R¹², OCOR¹³, OSO₂R¹³, CONR¹¹R¹², CONR¹¹COR¹³, CONR¹¹SO₂R¹³, NR¹⁴CONR¹¹R¹², NR¹⁴COOR¹⁰, OCOOR¹⁰, OCONR¹¹R¹², SO₂OR¹⁰, OSO₂OR¹⁰, SOR¹³, a carbocyclic ring which may have a substituent(s) or a heterocyclic ring which may have a substituent(s);

R¹⁰ represents:

- (1) a hydrogen atom,
- (2) a C1-8 carbon chain which may have a substituent(s),
- (3) a carbocyclic ring which may have a substituent(s), or
- (4) a heterocyclic ring which may have a substituent(s);



R¹¹, R¹², and R¹⁴ each independently represents:

- (1) a hydrogen atom,
- (2) a C1-8 carbon chain which may have a substituent(s),
- (3) a carbocyclic ring which may have a substituent(s),
- (4) a heterocyclic ring which may have a substituent(s),
- (5) COR¹³, or
- (6) SO₂R¹³;

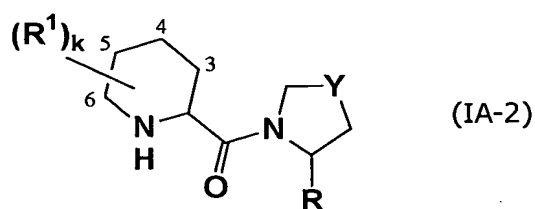
R¹³ represents:

- (1) a C1-8 carbon chain which may have a substituent(s),
- (2) a carbocyclic ring which may have a substituent(s), or
- (3) a heterocyclic ring which may have a substituent(s);

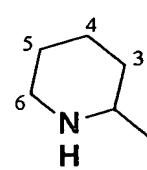
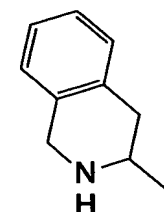
k represents 0 or an integer of 1 to 5;

 represents a single or double bond; wherein when  is a single bond, k represents an integer of 1 to 5;
the other symbols have the same meanings as defined in claims 1 and 2, or a salt thereof.

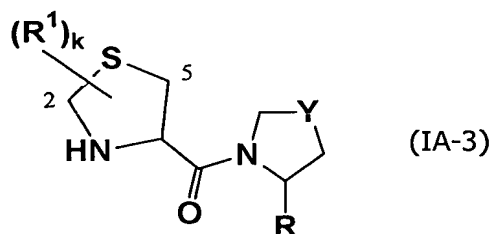
4. The compound according to claim 1, which is represented by formula (IA-2):



wherein all symbols have same meanings as defined in claims 1 and 2, wherein a ring

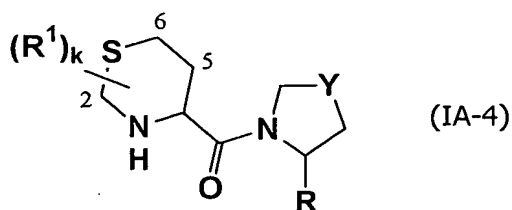
represented by , taken together with two R¹'s, does not form , or a salt thereof.

5. The compound according to claim 1, which is represented by formula (IA-3):



wherein all symbols have the same meanings as defined in claims 1 and 2, or a salt thereof.

6. The compound according to claim 1, which is represented by formula (IA-4):



wherein all symbols have the same meanings as defined in claim 2; or a salt thereof.

7. A dipeptidyl peptidase IV inhibitor which comprises the compound represented by formula (I) described in any one of claims 1 to 5 or a salt thereof as an active ingredient.
8. The inhibitor according to claim 7, which is an agent for prevention and/or treatment of dipeptidyl peptidase IV mediated diseases.
9. The inhibitor according to claim 8, wherein the dipeptidyl peptidase IV mediated disease is diabetes mellitus, obesity, autoimmune disease, cancer metastasis, HIV infection, dermatosis or prostatic hypertrophy.
10. A dipeptidyl peptidase IV inhibitor which comprises the compound represented by formula (I), or a salt thereof, and one or at least two agents selected from a PPAR agonist, a sulfonyl urea system hypoglycaemic agent, an insulin sensitizer, an α -glucosidase inhibitor and an acute effect type insulin secretant.
11. A method of inhibiting a dipeptidyl peptidase IV which comprises administering to a mammal an effective amount of the compound represented by formula (I) or a salt thereof.
12. A use of the compound according to claim 1 or a salt thereof for the manufacture of a dipeptidyl peptidase IV inhibitor.
13. A pharmaceutical composition which comprises the compound described in claim 1 or a salt thereof.
14. A prodrug of the compound according to claim 1.